



Patent
Attorney's Docket No. 018765-144

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of) **MAIL STOP AMENDMENT**
Yoichi Kodama et al.)
Application No.: 10/671,565) Examiner: HAIDER, SAIRA BANO
Filed: September 29, 2003) Confirmation No.: 4272
For: METAL LAMINATE)

DECLARATION UNDER 37 C.F.R. §1.132

Commissioner for Patents
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Sir:

I, Masao KAWAGUCHI, hereby declare as follows:

I have graduated from a Masters Course of Toyohashi Technology University in 2002 and been employed in Mitsui Chemicals, Inc. in April of 2002.

I was assigned immediately to the Electronic & Engineered Laboratories of Mitsui Chemicals, Inc. and have been engaged in the development of flexible circuit substrates since January 2003.

I have read and am familiar with the above-identified patent application and the references cited by the Examiner, i.e., U.S. Patent No. 4,987,207 to Yamaya et al. (hereinafter "Yamaya"), and U.S. Patent No. 5,508,357 to Matsuura et al. (hereinafter "Matsuura").

I carried out the following Experiments so that the present invention could be more fully understood by the Examiner.

REPORT OF EXPERIMENTS

1. Object of Experiments

The object of these experiments is to prove that the characteristics necessary for the resin film which is formed on a metal foil such as solder heat resistance, peel strength to the metal foil, and softening point have no correlation with each other and it is not easy to find a proper film materials to be formed on the metal film that satisfies all of the necessary characteristics.

2. Method and Results of the Experiments

I prepared specimens in accordance with JIS C6471 (2 patterns of 25mm X 25mm in the same sheet) for each of the materials same as the films of examples 13, 15 and 17 of Yamaya. The specimens were treated under 85%RH and 85 degree centigrade (°C) for 48 hours for pretreatment. Then, the specimens were floated in the solder bath between the range of 260 degree centigrade and 340 degree centigrade for 10 seconds. The solder heat resistance temperature of each of the specimens were determined to be a temperature of the solder bath at which no blister were seen.

The solder heat resistance temperatures (degree centigrade) as determined by the above experiments are shown in the table below. Here, the Tensile shear strength which is disclosed in Yamaya are also shown in the table for the reference.

Table 1

	solder heat resistance temperature	Tensile shear strength (240 °C)
	°C	kg/cm ²
Ex. 13	310	205
Ex. 15	290	205
Ex. 17	340	190

3. Consideration of the Experiments:

As the result of the experiments, it is understood that the films having higher tensile shear strength have not always show higher solder heat resistance.

Date: January 18, 2007 By: Masao Kawaguchi